

WORKSHEET FOR CMD LINEAR EQUATION

Definitions:

Point 2, having coordinates (x_2, y_2) is selected to represent the concrete mix design (CMD) which has a target air content and unit weight as follows:

$$x_2 = 6.5 \%$$

$$y_2 = \sum \text{Design Batch Weights} \div 27.00 \text{ ft}^3$$

$$y_2 = \underline{\hspace{2cm}} \text{ lbs} \div 27.00 \text{ ft}^3$$

$$y_2 = \underline{\hspace{2cm}} \text{ lbs/ft}^3 \text{ (rounded to first decimal place)}$$

Point1, having coordinates (x_1, y_1) is selected to represent the y-intercept which has a theoretical air content and unit weight as follows:

$$x_1 = 0.0 \%$$

$$y_1 = \sum \text{Design Batch Weights} \div 25.24 \text{ ft}^3$$

$$y_1 = \underline{\hspace{2cm}} \text{ lbs} \div 25.24 \text{ ft}^3$$

$$y_1 = \underline{\hspace{2cm}} \text{ lbs/ft}^3 \text{ (rounded to first decimal place)}$$

Solution:

$$\text{slope} = m = (y_2 - y_1) / (x_2 - x_1)$$

$$m = (\underline{\hspace{1cm}} - \underline{\hspace{1cm}}) / (6.5 - 0.0)$$

$$m = (\underline{\hspace{1cm}}) / (6.5)$$

$$m = \underline{\hspace{1cm}} \text{ (negative value, rounded to the second decimal place)}$$

$$\text{y-intercept} = b = y_1$$

$$b = \underline{\hspace{2cm}} \text{ lbs/ft}^3$$

Linear Equation:

$$\text{Predicted Unit Weight} = m (\text{Air}) + b$$

$$\text{Predicted Unit Weight} = \underline{\hspace{1cm}} (\text{Air}) + \underline{\hspace{1cm}}$$

(note: calculation for Predicted Unit Weight is to be rounded to first decimal place)